7. CONSERVATION AND ENVIRONMENTAL PROTECTION

This section discusses a variety of environmental issues of concern to Hayward. These issues focus on conservation of natural resources and protection from environmental hazards. Issues related to the conservation of natural resources include preservation of open space, protection of mineral resources, biological resources, and hydrology and water quality. Issues related to environmental protection include geological and seismic hazards, flood hazards, hazardous materials, air quality, and noise mitigation. These issues are similar to those that are required to be addressed in local general plans pursuant to guidelines established for the state-mandated Open Space, Conservation, and Safety Elements.

Open Space Preservation

There is a need to protect surrounding regional open space as well as maintaining open space corridors within the urbanized area. Both the shoreline area on the western edge of the city and the hill area east of the city are significant as regional open space and as ecological resources. Based on comments from community residents, it is also evident that these areas are considered important community amenities in that they provide an aesthetic backdrop for the city. The shoreline and hill areas are also of local significance in that they help shape the form and boundaries of urban development. The Urban Limit Line serves to define the border between the urbanized area and regional permanent open space.

Shoreline Area

In the shoreline area, efforts over the past 30 years by member agencies of the Hayward Area Shoreline Planning Agency have resulted in the acquisition and restoration of over 3,000 acres. See **Figure 7-1**. In addition, there are several ongoing projects that will preserve even more of this area as wetlands or upland habitat. Both projects are shown in cross-hatching on the map. Restoration work on the Eden Landing Ecological Reserve (Baumberg Tract) is scheduled starting in 2001. Work on the new HARD Marsh (former Oliver Salt Ponds) west of the Shoreline Interpretive Center is also scheduled to begin in 2001. Both of these projects will provide for extension and/or enhancement of the Bay Trail, thereby completing all planned segments along the Hayward shoreline. In comparison, approximately one-half of the Bay Trail is completed throughout the entire region.

While all of the shoreline north of Route 92 is now in public ownership, except for a former landfill site at the end of West Winton Avenue, most of the shoreline south of Route 92 is in private ownership, primarily salt ponds owned by Cargill. These two areas are discussed briefly below.

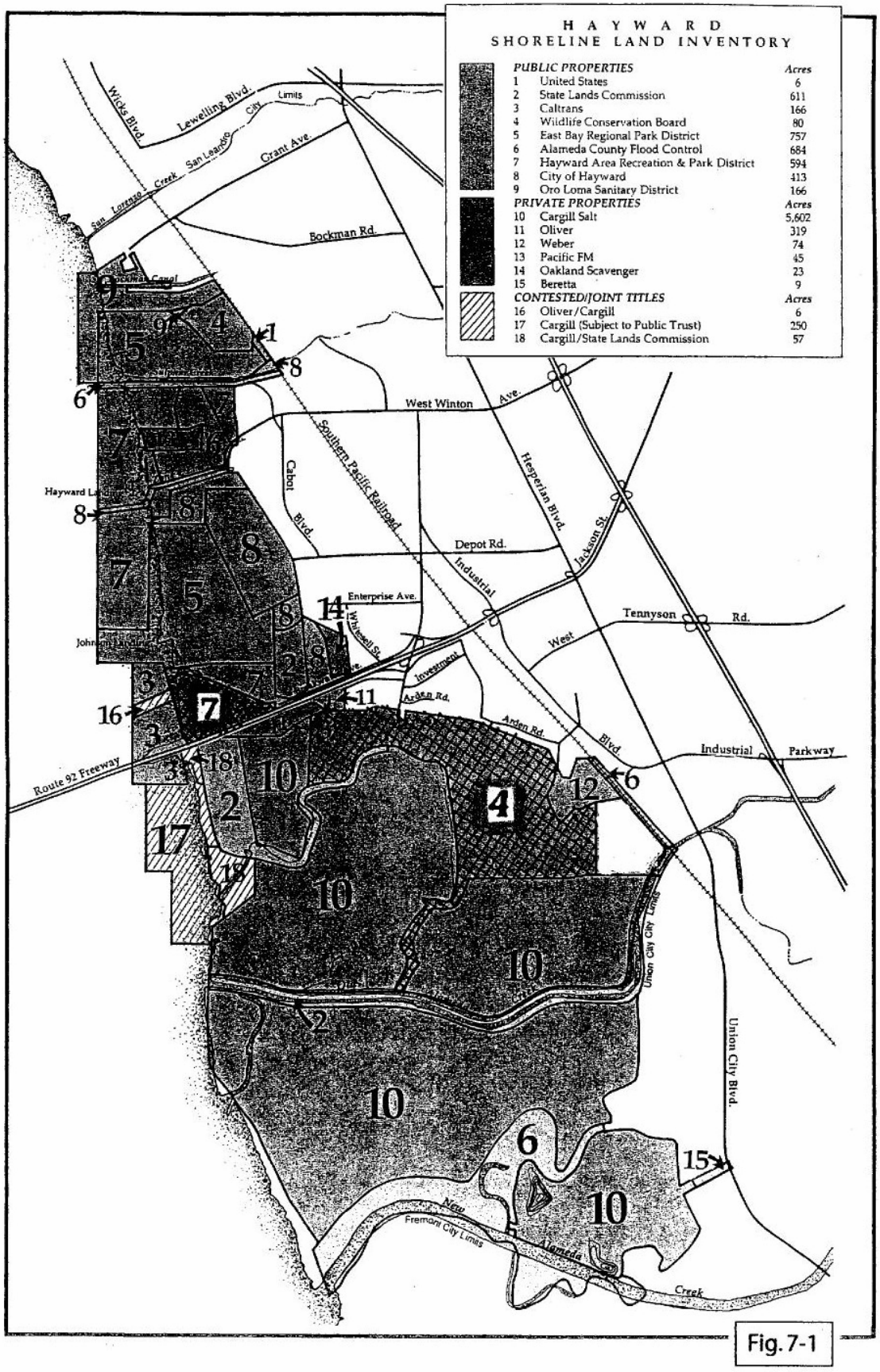

HAYWARD
SHORELINE LAND INVENTORY
PUBLIC PROPERTIES Acres
1 United States 6
2 State Lands Commission 611
3 Caltrans 166
4 Wildlife Conservation Board 80
5 East Bay Regional Park District 757
6 Alameda County Flood Control 684
7 Hayward Area Recreation & Park District 594
8 City of Hayward 413
9 Oro Loma Sanitary District 166
PRIVATE PROPERTIES Acres
10 Cargill Salt 5,602
11 Oliver 319
12 Weber 74
13 Pacific FM 45
14 Oakland Scavenger 23
15 Beretta 9
CONTESTED/JOINT TITLES Acres
16 Oliver/Cargill 6
17 Cargill (Subject to Public Trust) 250
18 Cargill/State Lands Commission 57
Wicks Blvd.
Lewelling Blvd.
City Limits
San Leandro Creek
Grant Ave.
San Lorenzo Creek
Bockman Rd.
Bockman Canal
West Winton Ave.
Southern Pacific Railroad
Cabot Blvd.
Hesperian Blvd.
Jackson St.
Depot Rd.
Industrial
Enterprise Ave.
Whitesell St.
Tennyson Rd.
West Investment
Ardenwood Blvd.
Arden Rd.
Industrial Parkway
Route 92 Freeway
Union City Blvd.
Union City Limits
Fremont City Limits
Alameda Creek

Fig. 7-1

West Winton Avenue. Former landfill sites at the end of West Winton Avenue include the privately-owned parcel (formerly Pacific FM) as well as parcels owned by the City. Both landfill sites are designated as Open Space/Parks and Recreation in the General Plan, and existing land use policies call for the establishment of passive recreational areas that do not interfere with surrounding wetland habitats. These areas could ultimately be developed in a manner similar to the Oyster Bay shoreline park in San Leandro south of the Oakland International Airport. Existing regulations and project conditions of approval allow radio transmission towers to exist on the privately-owned parcel. Perhaps similar towers may be relocated on the city-owned parcel in conjunction with the proposed Russell City Energy Center to be located on a site farther south.

Cargill Salt Ponds. These salt ponds extend from Route 92 south to New Alameda Creek and encompass approximately nine square miles. Cargill has indicated that it plans to cease operations at this location, as well as other locations in the South Bay, and consolidate its operations around the existing plant in Newark. Possible purchasers of these properties include federal and state agencies, which might then manage the land as part of the San Francisco Bay National Wildlife Refuge. Other purchasers could include regional agencies such as the San Francisco International Airport, which would need to provide for substantial mitigation of lost wetlands should their proposed runway extension project be approved.

East Hills Annex

In the hill area, the area commonly known as the East Hills Annex extends from Walpert Ridge across Palomares Canyon and three different ridges to the Pleasanton city limits. See **Figure 7-2**. This area, which covers approximately five square miles, was originally annexed in 1967 to accommodate a proposal for rural homesites. Today, most of the land remains in agricultural or grazing uses. The Agricultural zoning in this area requires a minimum lot size of 160 acres. The East Bay Regional Park District has purchased numerous large parcels in the eastern portion in recent years for inclusion in the Pleasanton Ridgelands Regional Park. The Ridgelands Area Policies (see Appendix J), which were adopted in separate actions by Hayward, Pleasanton, and Alameda County in 1993, call for certain adjustments in the political boundaries. Specifically, the City of Hayward is to retain its Sphere of Influence west of Palomares Road, and detach the area along Santos Ranch Road while annexing comparable area from the County. Implementation of this policy has not been pursued. In light of the passage of Alameda County's Measure D in November 2000, it may be appropriate to revisit the Ridgelands Area Policies. This measure, which applies to all of the unincorporated areas east of Walpert Ridge, requires voter approval of any changes in open space land use policies of the Alameda County General Plan. It should be noted that legal challenges have been filed concerning various aspects of Measure D.

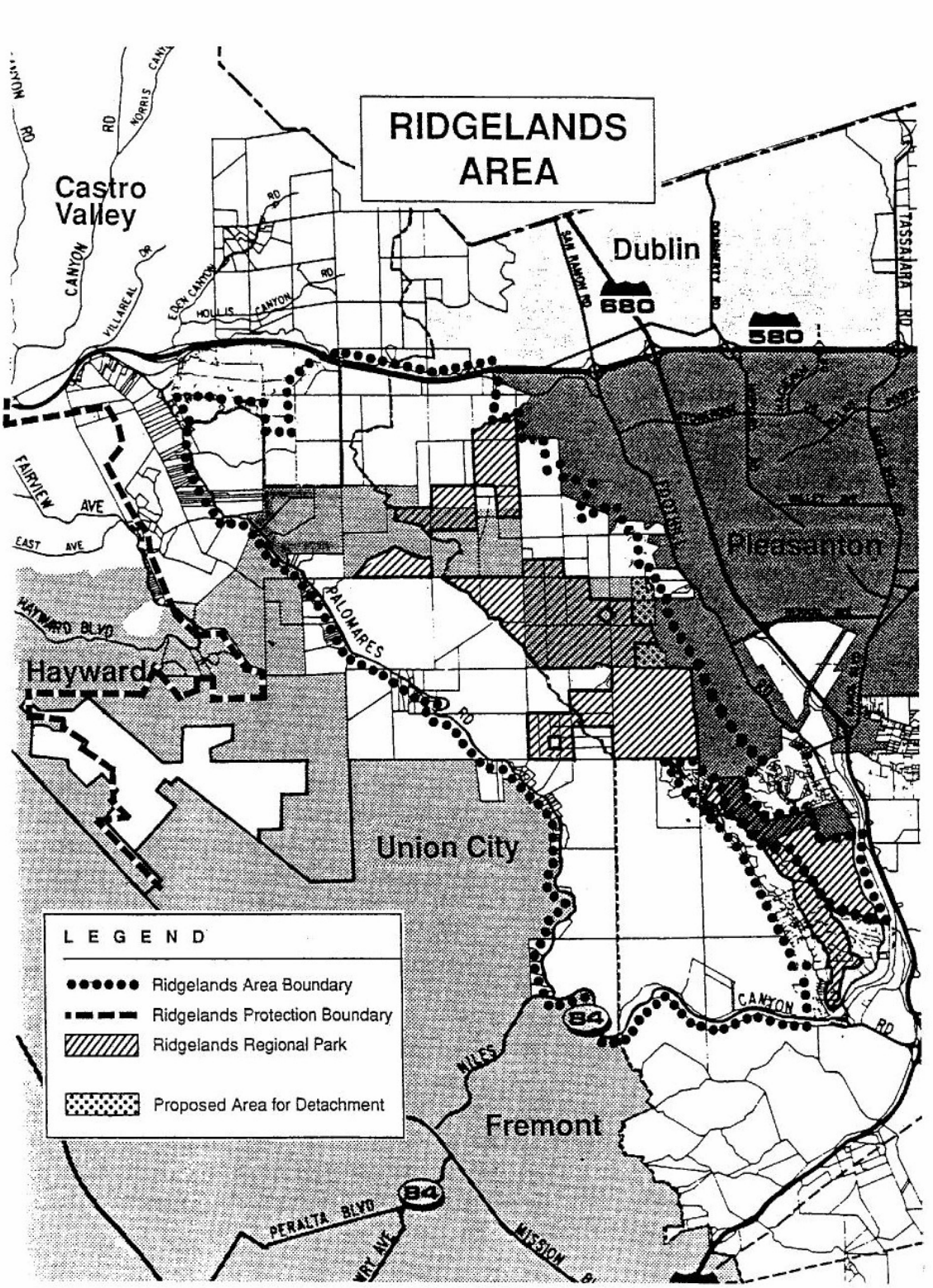

RIDGELANDS AREA
Castro Valley
Dublin
Pleasanton
Hayward
Union City
Fremont
580
680
84
LEGEND
Ridgelands Area Boundary
Ridgelands Protection Boundary
Ridgelands Regional Park
Proposed Area for Detachment

Fig. 7-2

Mineral Resources

The state requires local jurisdictions to protect areas with economically significant mineral resources from incompatible development. In an effort to maintain availability of sand, gravel and crushed rock for long-term construction needs, the California Division of Mines and Geology (under the authority of the Surface Mining and Reclamation Act of 1975) has classified aggregate mineral zones throughout the state. The only designated "sector" of regional significance in Hayward meeting tests of economic feasibility and current compatible land use that is to be protected from land uses incompatible with mineral extraction is La Vista Quarry, located in the unincorporated area east of Mission Boulevard and Tennyson Road. "Probable" and "potential" resource zones have been designated in the vicinity of the quarry. No other significant aggregate or mineral resources are located in the City.

The current Surface Mining Permit for the La Vista Quarry issued by Alameda County expires in 2008. The City expects to consider annexing the La Vista Quarry within the next few years as its operations are terminated due to the depletion of the accessible aggregate resource. Under conditions of approval for renewal of the permit, the landowners must initiate application for annexation to the City by the summer of 2002. The General Plan incorporates future land use designations for the quarry site that are compatible with the state-mandated reclamation plan. Upon closure of the La Vista Quarry, the City would instead rely on the production of other quarries in the region, which is expected to be adequate to meet the needs of the City and others for the foreseeable future.

Biological Resources

As Hayward is an urbanized area, vegetation cover in Hayward's remaining open spaces is critical to environmental issues of erosion, sedimentation, flooding, landsliding, groundwater percolation, and water quality. In addition, mature plants and moderate climatic conditions contribute significantly to the aesthetic quality of the city. The city's remaining riparian plant communities are important for their aesthetic quality and for the stream bank protection they provide. The city's shoreline plant communities are particularly valuable as wildlife habitat and are also particularly sensitive to environmental changes caused by development.

As with other urbanized areas in the East Bay, viable wildlife habitats are sensitive to development and are becoming scarce. Wildlife resources are located throughout the undeveloped portions of the hill area, along streams, in parklands, and in the shoreline marshes and salt evaporation ponds. In the shoreline areas, tidal flats and salt ponds of low salinity provide habitat for migratory waterfowl. In addition, a few species such as deer, many birds, and a few small mammals are found in even the most urbanized residential zones of the city. Rare or sensitive species sometimes require much more effort in their management and protection than more common wildlife species.

Special Status Species

In general, "special-status species" are plants and animals that are legally protected under the State and Federal Endangered Species Acts or other regulations, and species that are considered rare by the scientific community. See Appendix K for a more detailed description and list of affected species. Native vegetation and creeks have been modified over the past century to a degree that severely limits the value of the urban areas as habitat for special status plant and animal species. However, there are still some areas in the Hayward hills and the Hayward shoreline that provide grassland, woodland, and aquatic habitat, which are important for a number of protected species. In the hills, habitat areas may be present in large blocks of land that have not been systematically surveyed. This area is considered capable of supporting several special-status species and important habitat types generally associated with annual grasslands and coast live oak. In the shoreline area, which comprises over 8,500 acres, the Hayward Area Shoreline Planning Agency (HASPA) has prepared an Environmental Enhancement Program that identifies the various habitat types based on the geophysical and biophysical associations and makes recommendations for enhancements to each of the properties. In addition, provisions in several federal and state regulatory programs that address water quality concerns have also served to further protect wetland and riparian habitats. These regulations establish jurisdiction over those areas defined as "other waters of the United States", which include several drainage channels in the Hayward area.

Hydrology and Water Quality

Major concerns in Hayward include protection of surface watercourses and groundwater supplies.

Surface Watercourses

Several creeks and numerous storm drainage channels pass through the city, originating in the hills to the east and ultimately draining into San Francisco Bay. See **Figure 7-3**. The discharge from these facilities may contain pollutants from rural and urban storm runoff, and illegal dumping into creeks. Pollutant levels are dependent on the pattern and frequency of storm events, local land uses, development activity, and the quality of pollution control measures and practices.

The Regional Water Quality Control Board (RWQCD) Region 2 has prepared a comprehensive Water Quality Control Plan (*Basin Plan*, 1995) that includes water quality objectives and an implementation plan for the various waterways in the region. A National Pollutant Discharge Elimination System (NPDES) storm water discharge permit has been granted to the Alameda County Urban Runoff Clean Water Program, which was established to comply with the non-point source pollution control requirements mandated by the RWQCB. The Alameda County Flood Control and Water Conservation District is responsible for the overall coordination and implementation of the Storm Water Management Plan, which is designed to reduce the discharge of pollutants in storm water to the maximum feasible extent. The City of Hayward monitors the efforts of municipal

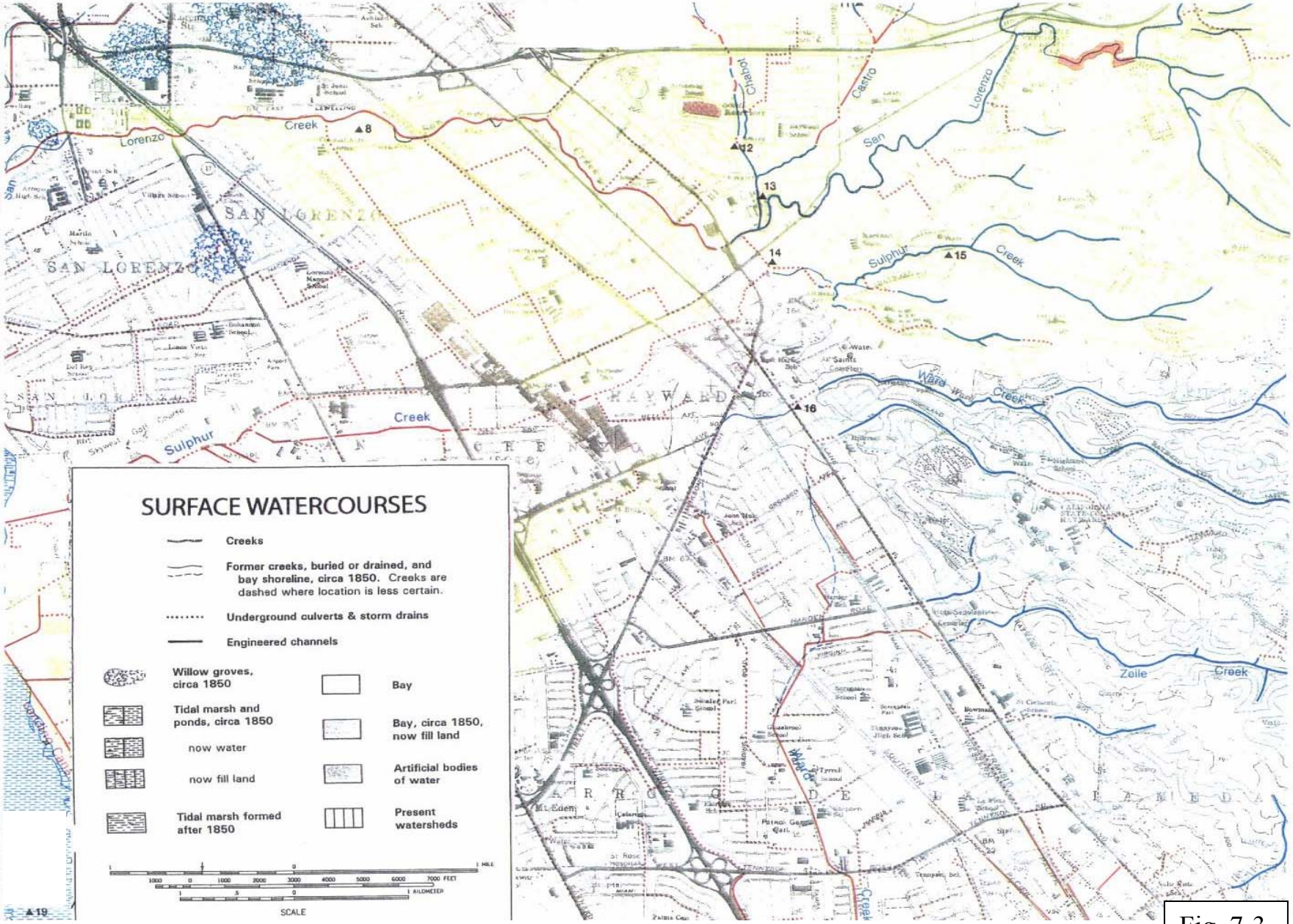

SURFACE WATERCOURSES
Creeks
Former creeks, buried or drained, and bay shoreline, circa 1850. Creeks are dashed where location is less certain.
Underground culverts & storm drains
Engineered channels
Willow groves, circa 1850
Tidal marsh and ponds, circa 1850
now water
now fill land
Tidal marsh formed after 1850
Bay
Bay, circa 1850, now fill land
Artificial bodies of water
Present watersheds
SCALE
SAN LORENZO
HAYWARD
Lorenzo Creek
Sulphur Creek
San Lorenzo Creek
Ward Creek
Zeile Creek
Chabot
Castro
Palma Ceia
Mt. Eden

Fig. 7-3

storm water programs to implement the NPDES storm water permits and reviews the efforts of developers to reduce the impacts of proposed development to a less than significant level as part of the CEQA process.

Groundwater Supplies

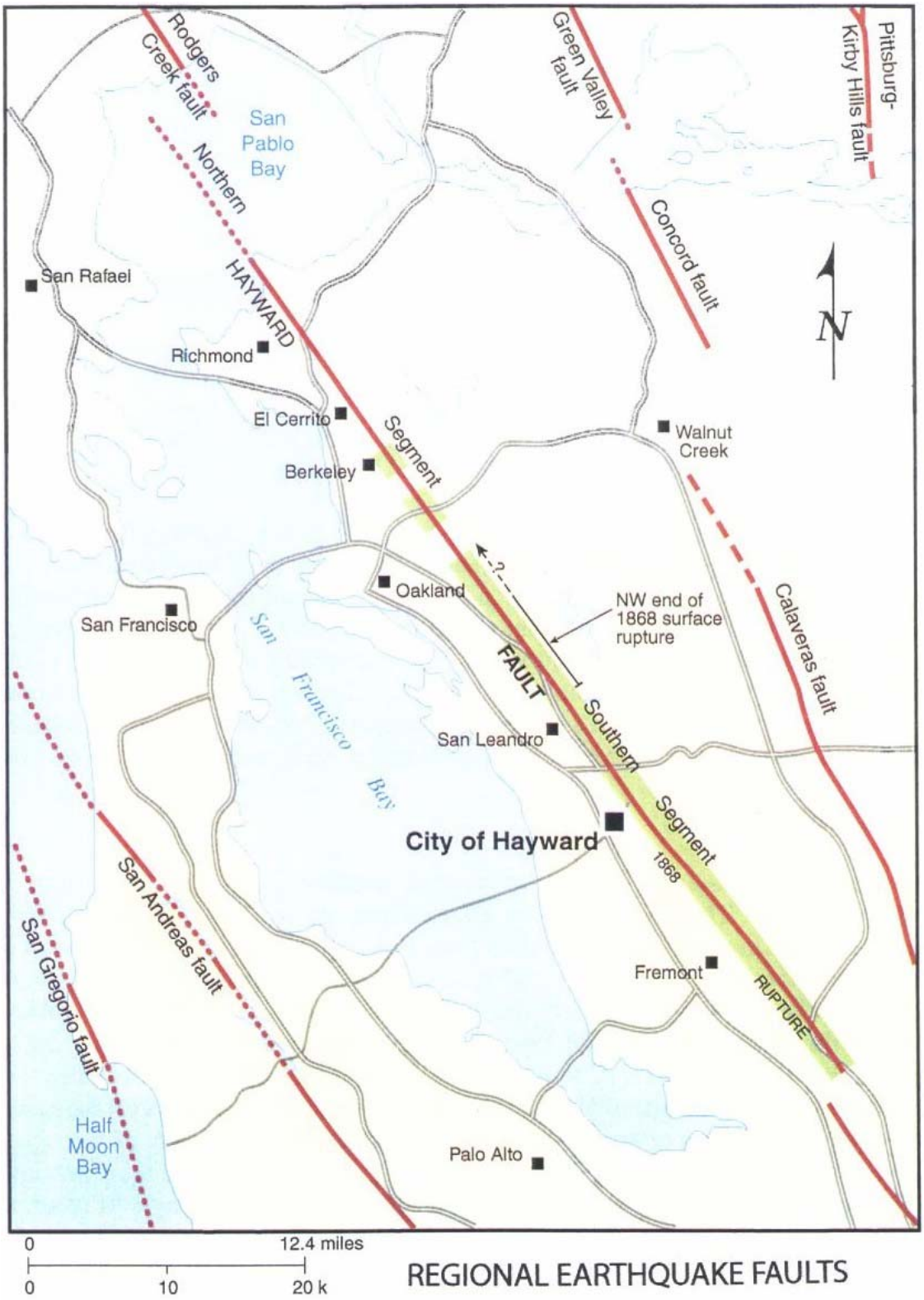
Groundwater resources are most prevalent in the Bay Plain and the shoreline area. Water-bearing sand and gravel layers extend to a depth of approximately 1,000 feet below the Bay Plain and are divided into upper and lower zones. The upper zone contains two major aquifers that are located at depths of 60 feet and 250 feet. The lower zone occupies a depth below 400 feet and contains a much higher percentage of permeable material than the low yield upper zone. Nearly all of the high-yielding wells in the area utilize the deep zone. Replenishment of the aquifers is accomplished primarily through percolation from the streambeds of major creeks. Relatively high concentrations of nitrates and total dissolved solids were measured in local area groundwater as early as the 1950s. Contaminants such as nitrates can come from a variety of sources, including runoff from fertilizers applied to lawns and landscaped areas as well as from agricultural activities and improperly operated septic systems. Groundwater contamination can also be attributed to leaking underground storage tanks and inadvertent releases of hazardous materials.

Geologic and Seismic Hazards

This section summarizes the current state of knowledge about existing conditions and provides information on related geologic and seismic hazards within the city for development of criteria to protect life and property. Active and potentially active faults in the Hayward area are identified and discussed briefly. Five primary geologic and seismic hazards are also discussed in this section, including: strong ground shaking, fault rupture, liquefaction, slope instability, and water inundation from tsunami or dam-failure.

Active and Potentially Active Faults

The Hayward fault is one of the most hazardous faults in the United States, because of its high slip rate, its demonstrated ability to generate a large earthquake and, importantly, its location through the highly urbanized eastern San Francisco Bay area. The Hayward fault is of particular significance to the City of Hayward because it traverses the most intensively developed portions the city and because it has generated a large, surface-rupturing earthquake in historic time. The Hayward fault lies along the southwestern margin of the East Bay Hills and extends from the Warm Springs district of Fremont on the south to San Pablo Bay on the north. See **Figure 7-4**. The fault is deemed capable of generating a maximum earthquake of about M_W 6.9 (CDMG, 1996). The Hayward fault accumulates strain at one of the highest rates of all the faults within the San Francisco Bay region, which suggests that it is one of the most likely faults in the region to generate a large earthquake. The Working Group on California Earthquake Probabilities (1999)



. Regional fault map showing location of the City of Hayward, and the 1868 rupture (green) on the Hayward fault.

Fig. 7-4

has estimated there is a 32% probability for the occurrence of a large earthquake in the next 30 years on the Hayward-Rodgers Creek fault system.

The Hayward fault typically is divided into two major rupture segments (the northern and southern Hayward faults), each approximately 30 miles long. The northern segment of the fault extends from Oakland to San Pablo Bay. The southern Hayward fault extends from Fremont on the south to Oakland on the north, and is the segment that traverses the City of Hayward. The southern Hayward fault ruptured in a M6.8 earthquake in 1868 and caused extensive damage to man-made structures in downtown Hayward. The earthquake was accompanied by surface rupture along the Hayward fault zone from Oakland to the Warm Springs District of Fremont. Fault creep is occurring along the entire length of the Hayward fault, resulting in slow but persistent damage to man-made structures. The rate of creep deformation along the fault in Hayward is about 5 mm/yr (roughly 2 inches every 10 years). The Hayward fault is one of only a handful of faults throughout the world that are known to creep at these rates.

Other potentially active faults within Hayward include the Chabot fault, the Carlos Bee fault, and several unnamed secondary faults adjacent to the Chabot and Hayward faults. See Appendix L. There are few or no studies that address the activity (and seismic potential) of several additional secondary faults that parallel and may be interrelated with the Hayward fault. These faults may or may not experience secondary ground rupture during a large earthquake on the Hayward fault. The amounts of possible displacement along these faults during such a scenario is unknown, but most likely is substantially less than the amount of displacement expected along the main trace of the Hayward fault.

Strong Ground Shaking

An earthquake produces seismic waves that emanate in all directions from the fault rupture surface. The seismic waves cause strong ground shaking, which typically is strongest near the fault and diminishes (attenuates) as the waves move through the earth away from the fault. The severity of ground shaking at a particular site is controlled by the interaction of several factors, including the distance from the earthquake source, earthquake magnitude, and the type, thickness, and condition of underlying geologic materials (bedrock, sediment, soils, and man-made fill). Recent research has shown that areas underlain by unconsolidated, recent alluvium and/or man-made fill may amplify the strength and duration of strong ground motions, increasing the risk of damage. Strong ground shaking caused by fault movement during an earthquake has the potential to result in significant loss of life and property damage throughout the city. Maximum ground shaking within the city would be expected to result from a large earthquake on the nearby Hayward fault, although strong ground shaking may also occur as a result of moderate or large earthquakes on other faults in the San Francisco Bay region. See Appendix L.

Fault Rupture

Surface fault rupture occurs when movement on a fault deep within the earth breaks through to the surface and ground displacement occurs. Damage associated with fault-

related ground rupture is normally confined to a fairly narrow zone along the trend of the primary fault, and to a lesser extent along secondary faults. Structures are often not able to withstand fault rupture, although well-engineered structures having favorable locations with respect to the fault trace may be able to withstand collapse and provide for the life-safety of occupants. Similarly, utilities crossing faults may undergo damage as a result of surface rupture, particularly if they are not specifically designed to accommodate fault displacements. Overall, however, fault displacement involves forces so great that it is generally not economically feasible to design and build structures to accommodate this rapid relative movement. The Alquist-Priolo Earthquake Fault Zone Act (A-P Act) was developed by the State of California to regulate development near active faults and mitigate the risk from surface fault-rupture. The A-P Act requires identification of active earthquake fault zones and restricts building structures for human occupancy over known active faults. A fault or fault zone is considered active under the provisions of the Act if there is evidence of surface displacement within the past 11,000 years.

Liquefaction

Liquefaction is defined as the transformation of a granular material from a solid state into a liquefied state as a consequence of increased pore pressure and decreased effective stress. Liquefaction typically is caused by strong ground shaking during an earthquake. The potential for liquefaction to occur depends on both the susceptibility of near-surface deposits to liquefaction, and the likelihood that ground motions will exceed a specified threshold level. Much of the city is adjacent to the Hayward fault and thus will be exposed to strong ground shaking during a large earthquake on the fault. The State of California currently is planning to map the distribution of liquefaction hazard within the Hayward area as part of CDMG's ongoing efforts to implement the statewide Seismic Hazards Mapping Act. Areas most susceptible to liquefaction in Hayward are underlain by granular sediments within younger alluvium and include low-lying lands adjacent to creeks and estuaries. See Appendix L.

Slope Instability

The eastern part of Hayward is located on steep, hilly terrain underlain by geologic materials prone to slope instability during large earthquakes. Landslides and slope instability can also occur as a result of wet weather, weak soils, improper grading, improper drainage, steep slopes, adverse geologic structure, or a combination of any of these factors. Landslides are most likely to occur in areas where they have occurred previously. Landslides and debris flows can result in damage to property and cause buildings to become unsafe either due to distress or collapse during sudden or gradual slope movement. Construction on slopes steeper than about 15 percent typically require special grading, special foundation design, or site modification to mitigate slope ground conditions and reduce the potential for slope instability. Slope instabilities produced by seismically induced strong ground motions are likely to occur in the eastern, hilly parts of

the city, given the occurrence of a moderate or large earthquake on the Hayward fault or another nearby seismic source. See Appendix L.

Water Inundation

A major hazard associated with earthquakes is water inundation resulting from dam failure or a tsunami. Although no dams or open reservoirs are sited within the city limits, potential inundation may occur downstream as the result of failure of reservoirs or dams upstream of the city. See Appendix L. Inundation from South Reservoir in Castro Valley would affect a few small areas at the northeastern edge of the city. Inundation from Del Valle and other dams along Alameda Creek would be limited to the salt evaporation ponds south of Old Alameda Creek in the shoreline area. Tsunamis are a series of waves typically produced by an offshore earthquake, volcanic eruption, or landslide. A tsunami with a wave height of 20 feet at the Golden Gate Bridge, which is likely to occur approximately once every 200 years, would result in a runup of less than 10 feet above sea level if it reached Hayward. Areas most likely to be inundated by tsunami runup within the city are marshlands, tidal flats, and former bay margin lands that are now artificially filled but are still at sea level.

Flood Hazards

Stormwater runoff is collected through a series of storm drainage facilities and ultimately enters San Francisco Bay. Most of these systems are governed by the Alameda County Flood Control and Water Conservation District (ACFCWCD), which designs and constructs drainage facilities to meet the existing and projected flood control needs. The City of Hayward provides local storm drains, generally within local streets and easements that ultimately enter the County system. These systems are adequate for most conditions. A 100-year flood is an event that would occur on the average every 100 years, and that has a one percent probability of occurring in any given year. Areas potentially subject to flooding from a 100-year event include various low-lying areas and areas adjacent to creek channels, as mapped by the Federal Emergency Management Agency (FEMA). Flood elevations and limits have been determined throughout the City. New mapping completed in 2000 indicates that certain portions of the industrial corridor are potentially subject to flooding. See Appendix L.

The City of Hayward participates in the Federal Flood Insurance Program, which will provide flood insurance to residents and businesses in known flood hazard areas. To participate in this program, a community must regulate development within or adjacent to flood-prone areas to avoid worsening the hazard. City standards require floor elevations of new development within the floodplain to be at least one foot above the 100-year flood height, or prohibit development within the floodway (generally, the stream channel required to carry the 100-year flood waters).

There is continuing debate over the potential effects of the global warming phenomenon. Based on some of the more dire predictions, water levels around San Francisco Bay could rise significantly. It is prudent to monitor ongoing research into global warming trends.

Hazardous Materials

Hazardous materials include substances that may be described as toxic, ignitable, corrosive, or reactive. In an urban area such as Hayward, most of the contaminated sites are related to the use or maintenance of fuels and motor vehicles, especially gas stations where underground fuel storage tanks have leaked. Repair garages, sales and service centers, and wrecking yards also generate auto-related wastes that have often been illicitly disposed of or spilled during the regular course of business. Gas station sites are regulated by existing state and federal law and most sites have been treated and returned to productive use. Other sources and types of properties that are contaminated include plant nurseries, building supply yards, paint stores, welding shops, and corporation yards for governmental agencies. Drycleaning establishments also have been identified as potential sources of hazardous materials. In most cases, listed sites within the City are located along major roadway corridors where automotive-oriented businesses tend to congregate.

Storage, handling, and documentation of hazardous materials and hazardous wastes are governed by federal, state and local laws designed to protect human health and the environment. In addition to the various programs of federal, state and county regulatory agencies, the City has instituted a Hazardous Materials Program within the Fire Department to inventory, map, and regulate the storage and handling of specified materials. The inventory is part of the City's enforcement of a law passed to protect Hayward property and citizens, as well as the fire fighters who respond to emergency calls. Contamination cases that are more difficult to investigate, such as those that involve industrial solvents that affect not only soils but groundwater as well, are being handled by the California Regional Water Quality Control Board.

Aside from the commonly understood sources of contamination discussed above, a more widespread possibility of exposure to hazardous materials (particularly asbestos and lead-based paints) is during the use, remodeling or demolition of existing structures, including homes. Asbestos is commonly found in pipe insulation, floor tile, joint compound, wallboard and roofs of buildings constructed before 1978. The use of lead-based paint was not completely halted until 1978. Homes at the highest risk for the presence of lead-based paint were commonly constructed prior to 1960.

Household hazardous wastes include leftover paint, solvents, antifreeze, used oil and batteries, cleansers, pesticides and pool chemicals. Alameda County has implemented provisions of its Household Hazardous Waste Plan that called for the development of three permanent facilities for household waste collection and recycling in Oakland, Hayward, and Livermore. These facilities collect, identify, sort, store, pack, and recycle or dispose of all hazardous wastes (except radioactive waste and explosives) delivered by residents of Alameda County and small businesses.

Emergency response is coordinated by the State Office of Emergency Services. The Hayward Fire Department has jurisdiction in the City limits and would respond to hazardous materials spills. The Department is a Certified Unified Program Agency (CUPA), in that it is qualified to handle multiple hazardous material issues that normally are under County or State jurisdiction. As a CUPA city, Hayward is responsible for hazardous materials programs such as storage tank regulations, accidental release plans, and hazardous material business plans. The Regional Water Quality Control Board would respond to spills that could enter the storm drain or flood control system. The Bay Area Air Quality Management District would respond to airborne releases to ensure compliance with applicable rules and regulations.

Air Quality

The climate of Hayward is affected by its proximity to San Francisco Bay. Winds are predominantly out of the northwest during the summer months. As a result, Hayward has a relatively high potential for poor air quality during the summer and fall. When high pressure dominates, low mixing depths and bay and ocean wind patterns can concentrate and carry pollutants from other cities to Hayward, adding to the locally emitted pollutant mix. In winter and spring the air pollution potential in Hayward is moderate.

Pollutants of Concern

Federal and state ambient air quality standards have been established for important pollutants. The state standards are more stringent, particularly for ozone and PM_{10}. The state and national ambient air quality standards cover a wide variety of pollutants; however, only a few of these pollutants are problems in the Bay Area either due to the strength of the emission or the climate of the region. The Bay Area Air Quality Management District (BAAQMD) maintains a monitoring site in Hayward, but it monitors a single pollutant, ozone. Ozone is also monitored in San Leandro just north and west of Hayward. A monitoring site in Fremont is the closest multi-pollutant monitoring site to Hayward. A summary of violations of air quality standards at these monitoring sites for the period 1998-2000 is provided in Table 7-1. The federal ambient air quality standards are generally met in the Hayward area, but the more stringent state standards for ozone and PM_{10} are exceeded. Wood burning in fireplaces and stoves is a significant source of PM_{10}, particularly during episodes when PM_{10} levels are highest.

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern in the Bay Area. Unlike criteria pollutants, no safe levels of exposure to TACs can be established. There are many different types of TACs, with varying degrees of toxicity. Sources of TAC's include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Diesel exhaust is of growing concern in the Bay Area. Diesel engine particulate has been identified as a human carcinogen. Mobile sources, such as trucks, buses, automobiles, trains, ships and farm equipment are by far the largest source of diesel emissions.

Table 7-1

Air Quality Standards Violations

Air Quality Data Summary for Hayward, San Leandro and Fremont, 1998-2000

Pollutant	Standard	Monitoring Site	Days Standard Exceeded		
			1998	**1999**	**2000**
Ozone	Federal 1-Hour	Hayward San Leandro Fremont	0 0 0	0 0 1	0 0 0
Ozone	State 1-Hour	Hayward San Leandro Fremont	4 2 7	4 3 3	1 1 2
Ozone	Federal 8-Hour	Hayward San Leandro Fremont	0 0 0	2 0 1	0 0 0
PM_{10}	Federal 24-Hour	Fremont	0	0	0
PM_{10}	State 24-Hour	Fremont	1	2	1
Carbon Monoxide	State/Federal 8-Hour	Fremont	0	0	0
Nitrogen Dioxide	State 1-Hour	Fremont	0	0	0

Source: Air Resources Board, Aerometric Data Analysis and Management (ADAM), 2001.

Notes. Ground level ozone, often referred to as smog, is not emitted directly, but is formed in the atmosphere through complex chemical reactions between nitrogen oxides and reactive organic gases in the presence of sunlight. Motor vehicles are the single largest source of ozone precursors emissions in the Bay Area. Carbon monoxide is formed by the incomplete combustion of fuels. Motor vehicles are by far the single largest source of carbon monoxide in the Bay Area. Concentrations of this pollutant have been steadily declining, and the region has been designated an attainment area for both the state and federal ambient air quality standards. Fine particulate matter (PM_{10}) includes a wide range of solid or liquid particles, including smoke, dust, aerosols and metallic oxides. There are many sources of PM_{10} emissions, including combustion, industrial processes, grading and construction, and motor vehicles. Reductions in motor vehicle use are needed to significantly reduce PM_{10} emissions from re-suspended road dust. Other controls on this source include the adoption of emission standards for wood stoves and fireplace inserts. Interest in wood smoke is likely to increase with the recent adoption of a $PM_{2.5}$, (particulate matter less than 2.5 microns in diameter) national standard. The monitoring of this pollutant and determination of the attainment status of the region are several years off due to the lack of a monitoring system.

Other air quality issues of concern in the Bay Area include nuisance impacts of odors and dust. Objectionable odors may be associated with a variety of pollutants. Common sources of odors include wastewater treatment plants, landfills, composting facilities, refineries and chemical plants. Similarly, nuisance dust may be generated by a variety of sources including quarries, agriculture, grading and construction. Dust emissions can contribute to increased ambient concentrations of PM_{10}, particularly when dust settles on roadways where it can be pulverized and re-suspended by traffic.

Sensitive Receptors and Sources of Pollution

The BAAQMD defines sensitive receptors as facilities where sensitive receptor population groups (children, the elderly, the acutely ill and the chronically ill) are likely to be located. These land uses include schools, retirement homes, convalescent homes, hospitals and medical clinics. Such sensitive receptors are spread throughout most parts of Hayward.

The BAAQMD maintains inventories of stationary sources of both criteria pollutants and Toxic Air Contaminants (TACS). The BAAQMD inventory lists several major emitting facilities for criteria pollutants in Hayward; all are industrial in nature. The current inventory identifies numerous dry cleaners as sources of TACs spread over the commercial areas of Hayward. Several industrial sources are identified as TAC sources, as well as the Hayward Wastewater Treatment Plant. None of the sources of TACs in Hayward are considered as facilities with health risks requiring public notification under the Air Toxics Hot Spots Program.

Transportation Control Measures

There are currently no federal, state or local air quality-related constraints on cities in the Bay Area. Although the Bay Area is a federal non-attainment area for ozone, there are no plans to impose the federal sanctions provided for in the federal Clean Air Act. The BAAQMD has, however, developed guidelines and thresholds of significance for local plans that will affect the CEQA documentation for the Hayward General Plan Update. These guidelines recommend that general plans support the regional air quality plan by implementing those strategies that cities can implement. Appropriate language has been included in the policies and strategies.

Noise Mitigation

State law requires that a Noise Element be prepared as part of all city and county General Plans. The Element is required to identify noise problems in the community and work towards their resolution. The Noise Element must recognize the guidelines established by the Office of Noise Control in the State Department of Health Services and analyze and quantify, to the extent practicable, current and projected noise levels for all of the following sources:

- Highways and freeways.
- Primary arterials and major local streets.
- Passenger and freight on-line railroad operations and ground rapid transit systems.
- Commercial, general aviation, heliport, helistop, and military airport operations, aircraft overflights, jet engine test stands, and all other ground facilities and maintenance functions related to airport operation.
- Local industrial plants, including, but not limited to, railroad classification yards.
- Other ground stationary sources identified by local agencies as contributing to the community noise environment.

Noise contours are to be shown for all of these sources and stated in terms of community noise equivalent level (CNEL) or day/night average level (Ldn). The noise contours must be prepared on the basis of noise monitoring or following generally accepted noise modeling techniques for the various sources identified above. The noise contours serve as a guide for establishing a pattern of land uses that minimizes the exposure of community residents to excessive noise. The adoption of the Noise Element also serves as a guideline for compliance with the state's noise insulation standards.

As part of the update of the General Plan, a comprehensive noise monitoring survey has been conducted throughout the community. In addition, traffic noise levels have been evaluated for existing (2001) and future (2025) conditions. See Appendix M. The results of this modeling indicate that noise levels are not expected to change substantially along the existing street network. The proposed Route 238 Bypass would affect noise levels in northeastern Hayward. Other significant sources of noise in the community, including aircraft operations in the vicinity of the Hayward Executive Airport and at Oakland International Airport, railroad train operations along the Union Pacific Railroad lines, and the Bay Area Rapid Transit system are expected to remain essentially as they are today.

Noise Sources and Exposure in Hayward

The most pervasive and significant noise source in the Hayward is vehicular traffic noise on the streets and highways. Interstate 880 and State Route 238 (Foothill Boulevard and Mission Boulevard) carry the highest volumes of traffic and are the noisiest roadway corridors. 1-580 touches the northern edge of Hayward and does generate significant noise levels at sensitive receptors at the northern edge of the community overlooking the roadway.

The Union Pacific Railroad tracks run through central Hayward and along the west side. The Bay Area Rapid Transit system (BART) runs generally parallel to the central Hayward UPRR track and also is a significant source of wheeled rail noise through central Hayward.

There are two sources of aviation-related noise in Hayward: aircraft originating at the Hayward Executive Airport and flight operations at Metropolitan Oakland International Airport. The Hayward Executive Airport is primarily a general aviation aircraft facility. Noise issues related to the airport are described in the Draft Environmental Assessment/Environmental Impact prepared for the Hayward Executive Airport Master Plan. Noise levels resulting from aircraft operations at the airport are regulated by City of Hayward Ordinance 91-16, the Airport Noise Ordinance. There are noise abatement policies and procedures in effect at Hayward Executive Airport to abate noise from aircraft operations. These procedures affect flight paths at the airport. Noise measurements conducted in support of the Airport Master Plan EIR indicate maximum instantaneous noise levels of about 70 to 80 dBA at locations to the northwest of the airport runways, near Skywest Public Golf Course and adjacent residences. To the south of the airport noise levels during the monitoring survey were dominated by vehicular traffic on Hesperian Boulevard. At locations to the east of the airport (St. Joachim's School) propeller aircraft and turbo prop aircraft produced maximum noise levels of about 60 to 68 dBA. Similar noise levels were monitored at the Hayward Mobile Homes Estates. A noise attenuation berm is located at the south end of the airport (runway 28L). Noise studies completed during preparation of the Airport Master Plan indicate the berm effectively reduces noise from aircraft departing the airport.

Noise levels were monitored throughout Hayward in August of 2001. Long-term noise measurements (over a continuous 24-hour period) were made at 18 locations selected to represent noise levels along major thoroughfares, highways, railroad lines/BART, and in the vicinity of the Hayward Executive Airport. In addition, short-term spot measurements were conducted to characterize noise levels along additional streets throughout the community, and also at several of the long-term meters to provide anecdotal information as to sources of noise in the selected measurement areas. The results of these measurements are shown in Table 3 and 4. The 24-hour day/night average noise level (Ldn) is shown for each of the long-term meters. The equivalent sound level (Leq) during each hour and during each measurement interval for the short-term measurements, as well as selected statistical descriptors representing near maximum noise levels (Lo1 and L1o), median noise levels (Lso) and background noise levels (L9o), are also provided to describe the range of noise levels that occurred during the measurements. Descriptions of the noise measurement locations along with the measurement data are included in Appendix M.

Existing noise levels in Hayward are summarized on a noise exposure map. See Appendix M. The noise exposure map shows areas exposed to a noise level of greater than 60 dB Ldn and the source noise levels along major roadways at a distance of 50 feet from the roadway. The source noise levels are depicted in 5 dB increments beginning at a minimum level of 60 Ldn.

Noise and Land Use Compatibility

The Noise Element sets forth land use compatibility standards for community noise environments, outlines adjustments to the measured day/night average noise levels to

obtain the normalized Ldn for comparison to the proposed compatibility standards, and sets forth design objectives for maximum interior noise levels at different land uses. Guidelines are also proposed that describe the process to be used in evaluating development proposals with respect to noise levels. See Appendix N.

No significant changes to land use patterns are proposed as part of this update of the General Plan. It is likely that there will continue to be infill projects where noise sensitive land uses are proposed in areas where noise levels exceed those considered normally acceptable for the intended use. The policies and standards set forth in the Noise Element are sufficient to address these planning issues and mitigate any potential impacts to a less than significant level.

Increases in Transportation Noise

If the implementation of the General Plan would cause a substantial increase in noise levels at sensitive receptors along roadways in Hayward, this would be considered a significant impact. A 3 dBA increase in the Ldn is considered substantial and would cause a significant noise impact along a roadway.

Existing and future noise levels along the roadway network were compared by calculating roadside noise levels utilizing traffic data provided by the City of Hayward and its transportation consultants. Traffic projections for the existing conditions and the General Plan future conditions (year 2025) are shown in Appendix M. The data in the table include traffic volume, speeds, truck percentages and predicted noise levels at a distance of 50 feet from the roadway centerline. The table also sets forth the distances to the various noise contour intervals. A substantial reduction in vehicular traffic along Mission Boulevard south of A Street is anticipated with the completion of the Route 238 Bypass. If this does not occur, noise levels along Mission Boulevard would be expected to remain about the same as they are today. With this exception, there are no substantial differences in noise levels expected throughout Hayward during the lifetime of this General Plan. Future projections for vehicular traffic on I-880 were not available. I-880 already operates at capacity. Noise levels will, therefore, not change substantially along this interstate freeway.

Railroad train activity varies based on demand. There is no information available at this time to indicate that railroad train activity through Hayward will change substantially during the next twenty years. The Bay Area Rapid Transit District (BART) has seen an increase in BART trains as the headways have decreased to accommodate demand. Further increases in BART train activity are likely over the next two decades as the system expands and ridership increases. It is not possible at this time to calculate increases in noise levels that may result from changes to the BART system. Any increases in BART noise would not be directly related to the General Plan.

The Hayward Executive Airport Master Plan evaluated potential changes in aircraft noise at the Hayward Airport. The study concluded that there would be no substantial changes in aircraft noise over the lifetime of the Master Plan, which generally coincides with that

for the General Plan. Therefore, no noise impacts are anticipated to result from increases in aircraft operations at Hayward Executive Airport over the next twenty years.

Noise Exposure Contours

Noise exposure contours for the year 2025 have been developed based on expected traffic volumes, traffic network, and the assumptions regarding rail and aircraft noise described above. The noise contours are shown in Appendix M. The noise contours and noise exposure information used in combination with the policies and standards set forth in the Noise Element can be used to guide noise and land use planning in Hayward and mitigate any potentially significant noise impacts that could result.

CONSERVATION AND ENVIRONMENTAL PROTECTION POLICES AND STRATEGIES

Open Space Preservation

1. Retain open space where it is important to preserve natural ecology and to establish the physical setting of the city.

1. Designate on the General Plan Land Use map those areas on the shoreline, in the hills, and along waterways to be protected as open space in coordination with East Bay Regional Park District, Hayward Area Recreation and Park District, Alameda County, and other affected agencies.

2. Work with the East Bay Regional Parks District to explore all possible resources for public acquisition of permanent open space, including state and public trust funds, leases for private open space use, and additional bond measures.

3. Protect the rural character and utility of land in the East Hills Annex for grazing, agriculture, regional park or other open space use by limiting subdivision of land to very large minimum acreage (100 acres or greater).

4. Encourage interagency cooperation in the shoreline area enabling bayland acquisition and marsh restoration, and support eventual expansion of the national wildlife refuge.

Regional Trails and Open Space Linkages

2. Enhance the aesthetic and recreational values of open space resources in the hill and shoreline areas.

1. Continue development of the Ridge Trail through implementation of a continuous green belt from Lake Chabot to Garin Park in coordination with Alameda County, Hayward Area Recreation and Park District, and East Bay Regional Park District.

2. Support regional efforts to expand opportunities for camping, picnicking, swimming, hiking and riding activities within the Hayward planning area.

3. Continue to develop passive and active recreational facilities on former disposal sites and continuous trails for hiking and riding.

4. Continue development of the Bay Trail and connecting trail systems in the Baylands, and seek to replace on-street segments of the Bay Trail with an alignment on the levees or along the edge of the Baylands.

5. Encourage provision of public access to the Baylands in the review of adjacent development projects, consistent with federal and state policies.

6. Work with appropriate agencies to provide trail corridor links between the hill area and the Baylands, such as along San Lorenzo Creek and along Industrial Parkway with connections to Old Alameda Creek.

Hydrology and Water Quality

3. Protect existing watercourses and enhance water quality in surface water and groundwater sources.

1. Retain surface watercourses in their natural condition to the greatest extent possible.

2. Explore opening (or daylighting) water channels in selected areas to increase visibility to the public, enhance the aesthetics of the creekside environment, and provide for limited public access as appropriate.

3. Concentrate development in those areas least susceptible to erosion, and minimize grading and the introduction of impervious ground surfaces; where appropriate, consider including retention basins onsite.

4. Maintain continuity of creekside vegetation, with sufficient setback of development from creek slopes, with sensitive flood control designs, and with maintenance or reestablishment of native trees.

5. Protect riparian plant communities from direct encroachment of development and from the adverse effects of increased storm water runoff, sedimentation, or erosion that may occur from improper development in adjacent areas.

6. Discourage groundwater withdrawal in areas where the activity could result in intrusion of saltwater into freshwater aquifers.

7. Conduct inventory of private wells to assure the health and safety of citizens and to protect groundwater supplies.

8. Ensure that activities such as dredging and grading do not contribute to sedimentation of sloughs or marshes, and that the disposal of treated sewage does not result in the release of toxic metallic wastes into Bay muds.

9. Take an active role in increasing the use of reclaimed water and educating the community about the benefits of such efforts.

10. Encourage the use of dual plumbing systems in new buildings to recycle grey water.

Biological Resources

4. Protect and enhance vegetative and wildlife habitat throughout the Hayward area.

1. Avoid development that would encroach into important wildlife habitats, limit normal range areas, or create barriers that cut off access to food, water, or shelter.

2. Support efforts to reestablish and maintain marsh habitats on the baylands.

3. Preserve tidal flats and salt ponds of low salinity for the migratory waterfowl that depend on these areas.

4. Preserve saltwater evaporation ponds to provide important habitats and/or enhance in a manner commensurate with continued salt production.

5. Maintain environmental corridors across the bay plain such as creeks with native vegetation.

6. Utilize drought-tolerant plant materials in city landscaping.

7. Encourage the planting of native vegetation to preserve the visual character of the area and reduce the need for toxic sprays and groundwater supplements.

8. Preserve mature vegetation where possible to provide shade, break unwanted wind, and enhance the appearance of development.

Geologic and Seismic Hazards

5. Seek to minimize risks from geologic and seismic hazards in the siting and design of development.

1. Continue enforcement of the seismic safety provisions of the Alquist-Priolo Act and the Building Code to minimize earthquake-related hazards in new development, particularly as they relate to high occupancy structures or buildings taller than 50 feet in height.

2. Work with Caltrans and BART to minimize earthquake-related hazards with regard to freeway and rail overpasses.

3. Work with other agencies to ensure that electric transmission lines, water supply systems, wastewater collection systems, gas mains and oil transmission lines

crossing fault traces include provision for automated shut-off-valves, switches and equipment needed to restore service in the event of a major fault displacement.

4. Assume that any site within 50 feet of any fault zone is underlain by an active fault trace until proven otherwise, and prohibit placement of structures for human occupancy across such trace.

6. Continue development and implementation of programs to strengthen existing structures that may pose a significant threat to human life.

1. Examine the feasibility of developing a program to reduce the hazards posed by soft-story buildings (multifamily structures with little or no first floor bracing).

2. Examine the feasibility of developing a program to minimize risks to buildings in areas subject to liquefaction or other areas where soil/substrata amplify and prolong ground motion.

3. Strongly encourage the retrofitting of existing structures, using recognized techniques to withstand ground shaking.

7. Promote greater public awareness of earthquake hazards, along with assistance to help property owners make their homes and businesses more seismically safe.

1. Expand the scope of educational materials about seismic risks and mitigation measures distributed through the city's emergency preparedness program to include maps that identify potential ground shaking and liquefaction hazards.

2. Explore possible programs (e.g., community fairs, tool-lending libraries) to assist single-family homeowners with earthquake retrofitting measures to reduce the risk of damage and injury during an earthquake.

Flood Hazards

8. Cooperate with federal, state and county agencies to develop short- and long-term programs that reduce flood hazards in the city.

1. Continue to work with the Federal Emergency Management Agency to ensure that Federal Insurance Rate Maps correctly depict flood hazards in the city.

2. Implement federal requirements relating to new construction in flood plain areas to ensure that future flood risks to life and property are minimized.

3. Work with the Alameda County Flood Control and Water Conservation District to ensure that flood channels are regularly cleaned and maintained.

Hazardous Materials

9. Work with other agencies to minimize risks associated with the use, storage and transport of hazardous materials.

1. Continue implementation of the Hazardous Materials Program and enforcement of ordinance on use and storage of hazardous materials.

2. Maintain a suitable buffer zone between industrial firms involved with hazardous materials and residential areas.

3. Coordinate with state and federal agencies to provide appropriate labeling on vehicles transporting hazardous materials through the city and to encourage utilization of designated routes.

4. Continue collection program for household toxic wastes and small business generators.

5. Provide educational materials concerning hazardous materials to the general public and enforcement agencies.

Air Quality

10. Incorporate measures to improve air quality in the siting and design of new development.

1. Provide adequate buffers between sources of toxic air contaminants or odors and existing or potential sensitive receptors.

2. Evaluate hazardous air pollutant emissions in review of proposed land uses that may handle, store or transport hazardous materials.

3. Consider measures, including a local ordinance, which would reduce PM_{10} emissions from fireplaces and wood stoves.

11. Maintain improved air quality by creating efficient relationships between transportation and land use.

1. Guide development into patterns that reduce dependency on automobile usage.

2. Require pedestrian-, bicycle-, and transit-oriented features in new development projects.

3. Encourage compact development featuring a mix of uses that locates residences near jobs and services.

4. Facilitate the development of higher-density housing and employment centers near existing and proposed transit stations and along major transit corridors.

12. Support implementation of Transportation Control Measures adopted by the Bay Area Air Quality Management District.

1. Work with regional and local organizations to promote ridesharing opportunities.

2. Review and evaluate the Bicycle Facilities Master Plan to determine if revisions are necessary to promote bicycle usage.

3. Encourage employers and developers to provide bicycle access and facilities.

4. Continue ongoing local signal timing programs.

5. Incorporate subdivision, zoning and site design measures that reduce the number and length of single-occupant automobile trips.

6. Promote demonstration projects to develop new strategies to reduce motor vehicle emissions, such as projects that include Low Emission Vehicle (LEV) fleets and refueling infrastructure.

7. Emphasize pedestrian travel through establishment of pedestrian-friendly design standards and inclusion of pedestrian improvements in capital improvement programs

8. Consider traffic calming strategies in capital improvement programs.

Noise Mitigation

13. The City will seek to protect the public health, safety and welfare against the adverse effects of excessive noise.

1. Provide educational material and assistance to the community regarding noise mitigation, and promote the full disclosure of potential noise impacts within new infill development.

2. Continue to review new development to assure compatibility with surrounding land uses and compliance with accepted noise standards.

3. Encourage mitigation of noise through appropriate site planning, building orientation, and building materials.

4. Cooperate with adjacent jurisdictions and other agencies involved in noise mitigation, and work with transportation companies and/or agencies to mitigate noise impacts.

5. Continue to consider potential noise impacts in evaluating proposals for new transportation facilities, including streets and highways.

6. Encourage the California Department of Transportation (Caltrans) to construct attractive noise barriers along State highways adjacent to noise-sensitive uses.

7. Investigate methods for decreasing local street noise, such as modification of paving materials, removal of surface irregularities, and synchronization of signals to facilitate smooth traffic flow.

8. Continue to monitor the effectiveness of noise control programs at the Hayward Executive Airport.

9. Enact a community noise control ordinance.